NOTICE

All drawings located at the end of the document.

SAMPLING AND ANALYSIS PLAN
BLDG. 777, ROOMS 415/416

Rocky Flats Plant

(Decontamination & Decommissioning)

U.S. DEPARTMENT OF ENERGY

Rocky Flats Plant
Golden, Colorado

September, 1994

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FIELD SAMPLING PLAN
D&D Pilot Project No 6

APPROVAL PAGE

D&D Project Manager Date

Waste Identification and Characterization Manager Date

Sample Management Office Date

Field Sampling Team Date

Quality Assurance Date

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1 0 INTRODUCTION

EG&G Rocky Flats, Inc is preparing to Decontaminate and Decommission (D&D) Rooms No 415 and 416 in Building 777 These rooms were used as a Metallography Laboratory, for the preparation and examination of metallographic specimens in support of the Plutonium Metallography, Nuclear and Non-Nuclear Joining, Quality Engineering and Product Physical Chemistry groups
Room 415 is a 1500 ft^2 room containing an interconnected series of 20 gloveboxes, which contain all the equipment necessary to prepare metallographic samples of Pu and Be In addition, the room contains enough equipment outside of the gloveboxes for the preparation of non-nuclear metal samples The equipment for the preparation of non-nuclear samples is mounted on tables or work benches along the perimeter of the room Table No 1 is a listing of the gloveboxes in Room 415 and their primary use Table No 2 is a listing of the equipment in room 415 that is not mounted in gloveboxes Appendix C, and D contain the general location of these rooms, as well as layouts of the equipment within each room

TABLE No 1 ROOM 415 GLOVEBOXES

GLOVEBOX No	USE
301	storage
302	saw
303	saw
304	grinder
305	saw
307	grinder
308	grinder
309	sample encasing
310	scale/storage
311	pass-thru
312	vibratory polisher
313	electro-etch (no longer in use)
314	cathodic etching chamber (no longer in use)

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316	electro-etcher
317	vibratory polisher
318	vibratory polisher
319	vibratory polisher
320	vibratory polisher
321	electro-etcher
322	oxide furnace

TABLE No 2 ROOM 415 NON-GLOVEBOX MOUNTED EQUIPMENT

ITEM #	DESCRIPTION
1	process waste sink
2	bldg air supply and exhaust duct
3	SAAM
4	two (2) self monitoring stations
5	waste drum storage cabinet (12'x3'x4')
6	three (3) storage cabinets (3'x1'x7')
7	bench cabinet (3'x3'x3')
8	table (4'x2'x3')
9	table (6'x2'x3')
10	tool cabinet
11	table (4'x3'x3')
12	bench with vibro polisher (8'x2'x3')
13	table with grinder (3'x3'x3')
14	bench with curing oven (5'x2 5'x3')
15	bench (5'x3'x3')

16	acid storage cabinet (4'x1'x6')
17	cut off machine (2 5'x2 5'x3')
18	band saw
19	wall mounted cabinet (7'x1'x2')
20	wall mounted cabinet (5'x1'x3')
21	eye wash
22	safety shower
23	portable cabinet
24	ion exchange & filter system

Room 415 is used only for the preparation and short term storage of metal samples The analysis of the metal samples is performed in Room 416 Room 416 is a 870 ft^2 room located immediately north of Room 415 The room does not have any gloveboxes per se, but does have several enclosures that are vented to the zone 1 exhaust system The equipment connected to the zone 1 system is presented in table #3

TABLE #3, EQUIPMENT CONNECTED TO ZONE 1 HVAC Room 416

Item #	Description
1	x-ray machine
2	three (3) metallographs
3	hardness tester
4	scanning electron microscope
5	projection microscope
6	optical microscope

In addition to the above, the equipment listed in Table #4 is located in Room 416, but is not connected to the Zone 1 HVAC,

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TABLE #4, ADDITIONAL EQUIPMENT LOCATED IN ROOM 416

Item #	Description
7	microscope/photographic machine
8	two (2) classified repositories
9	metallograph
10	image analyzing computer
11	power supply, conditioner, chiller, computer and plotter for the x-ray machine
12	refrigerator
13	photography machine
14	trash compactor
15	file cabinet
16	three (3) desks
17	reference table

It is known that the metal sample preparation involves a number of known hazardous materials Included in the waste stream are such materials as, cutting fluids, oxalic acid, ethanol, sodium hydroxide, Be fines, and etching solution Table #5 is a listing of known hazardous materials generated in sample production, and the glovebox where these materials were used Note that the corresponding non-Pu operation generates the same waste stream In addition to the chemicals used in the sample preparation process, a 1993 Chemical Inventory listed approximately 100 chemicals stored in room 415 Most of these chemicals are incidental to the sample preparation process, many are hazardous Appendix "E" is a listing of the chemicals from the 1993 inventory This information was generated from the Waste Stream and Residue Identification and Characterization Report, The Chemical Control System, and interviews with operators of the lab

TABLE #5 WASTE STREAM AND SOURCE OF GENERATION

Source	Description
305	sectioning - cutting oil, Be fines
309 & 310	encapsulation - hi-vac grease, epoxy
303, 304, & 308	grinding - trichloroethane, Be fines
312, 317 - 320	polishing - kerosene, trichloroethane, ethanol, Be fines
316, & 321	etching - 855 electrolytic solution(acetic acid, chromic acid, water, nitric, ethylene glycol, methanol) oxalic acid, sodium hydroxide, ethanol, Be fines,
313	electropolishing - (**unknown contents, probably mild acid**)
314	cathodic etching - (**unknown contents, probably mild acid**)

2 0 GOAL & OBJECTIVES

The goal of the D&D Project for rooms 415 and 416 is to decontaminate(if possible) the rooms and the equipment in the rooms, and to remove all equipment, gloveboxes, and all but the most essential utilities from the rooms The end result of this project should be two rooms that are clean of hazardous and radiological contaminants, and which may be used for other non-contaminating purposes, or sealed and left in-place

The goal of this Sampling Plan is the characterization of rooms 415 and 416 for hazardous materials Information from the Chemical Control System, the Waste Stream and Residue Identification and Characterization (WSRIC), and interviews with knowledgeable personnel have provided considerable information on what hazardous materials have been in these rooms, and where they may have been used This information has been used to produce a Sampling Plan that strikes a balance between the cost of sampling and the quantity and quality of information required to characterize these rooms

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This sampling plan is intended as a characterization step, to identify which areas and equipment in Rooms 415 and 416 may be contaminated with hazardous materials This sampling will be conducted with sufficient Quality Control/Quality Assurance so that any piece of equipment identified as not being contaminated with hazardous material will be a prime candidate for disposal as non-mixed waste

The question of radiological contamination will be addressed in the Radiological Sampling Plan, and is beyond the scope of this Plan

If any item or area is identified as being contaminated with hazardous material, the issue of how to dispose or decontaminate it will be addressed in the Decontamination Plan or the Waste Management Plan The Decontamination and the Waste Management Plan will also address the issue of Regulatory Limits concerning cleanliness standards

3 0 REGULATORY CONCERNS

A series of meetings and correspondence between the Department of Energy/Rocky Flats Field Office (DOE/RFFO) resulted in a letter from Frederick R Dowsett, Chief, Monitoring and Enforcement Section, Hazardous Materials and Waste Management Division, Colorado Department of Health (now the Colorado Department of Public Health and Environment (CDPHE)) directed to Michael S Karol, Assistant Manager for Facility Operations, Department of Energy, Rocky Flats Office (now the Rocky Flats Field Office) This correspondence detailed an understanding of 6 CCR 1007-3, Sec 261 7 and Sec 261 22, how gloveboxes, and material used to clean gloveboxes, should not be treated as hazardous waste, merely because of contact with hazardous material The correspondence indicated that a glovebox would not have to be treated as hazardous material if it were "cleaned, or decontaminated, or that do not have obvious contamination with oils or solvents, are considered to not be mixed with hazardous wastes " It also indicated that wipes used to "clean or decontaminate materials are not hazardous when dry "

The above understanding has a large impact on the sampling and eventual disposal of gloveboxes and equipment in rooms 415 and 416 A review of the Chemical Inventory Tracking System indicates that three acutely hazardous chemicals were used in room 415

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These chemicals are,

beryllium
sodium cyanide
hexaethyl ester tetraphosphoric acid (HETA)

The beryllium(Be) was one of the metals that was prepared for analysis in room 415 The Be was subject to cutting, grinding and polishing operations Unlike most metals, Be is not normally etched for analysis

It is reasonable to assume that Be fines may be present in the gloveboxes where cutting, grinding, and polishing were performed After preparation, the Be was cleaned, bagged out of the glovebox line, and taken to room 416 for analysis Since the Be was cleaned before being taken to room 416, it is reasonable to assume that none of the test equipment in room 416 has Be contamination

The sodium cyanide was used as an etchant for carbides in stainless steel This chemical had limited usage in room 415 It was used only in glovebox 316 and 321 This chemical was normally stored in the acid storage cabinet, located on the west side of room 415

Hexaethyl ester tetraphosphoric acid(HETA) was also used as an etchant It was also used only in glovebox 316 and 321, and was stored in the acid storage cabinet, located on the west side of room 415

The above three chemicals are "P" listed substances per (6 CCR 1007-3 Sec 261 33(e) It is clear that these chemicals may contaminate the equipment and inside of the gloveboxes only as byproducts of a manufacturing process Since the gloveboxes are clearly not containers of the material, and were contaminated merely by incidental contact, the assumption will be that the gloveboxes and internal equipment are not to be treated as hazardous waste, unless there is visible evidence of contamination

As part of Deactivation, all of the chemicals that were stored in room 415 have been removed Also, as part of the deactivation mission, unneeded furnishings, such as tables, chairs, and desks are being removed In addition, the glovebox interiors and equipment are to be drained of any fluids(oils) and completely cleaned This process should satisfy the intent of 6 CCR 1007-3 Sec 261 7, and the above correspondence

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Four additional items must be dealt with before the gloveboxes could be considered for disposal

The first item concerns the leaded gloves used in these boxes Lead impregnated gloves have been shown to fail the Toxicity Characteristic Leaching Procedure (TCLP) The TCLP tests the ability of a hazardous material to leach from its matrix under controlled conditions This test simulates the conditions the matrix would experience in a land fill, over an extended period of time The gloves will eventually be disposed of as mixed, (probably) low level waste The gloves will be left in place, until the actual strip out of the boxes, both as a waste minimizing step, and to allow access to the interior of the gloveboxes Gloves which are not lead impregnated, and which are cleaned, will be considered non hazardous waste when disposed

The second item concerns the leaded glass in the gloveboxes Leaded glass is an "inherently hazardous" material, and will be disposed of in the same manner as the gloves

The third item concerns the lead shielding on the boxes The lead shielding must also be considered as an "inherently hazardous" material, unless it can be recycled There is currently no mechanism for recycling lead at Rocky Flats Thus the shielding will be disposed of as hazardous, (possibility) low level waste

The fourth item to be considered is the paint on the gloveboxes In the past, it was common practice to use a leaded paint on gloveboxes as an ALARA measure It is not known whether the paint is actually lead based or not The RCRA regulations stipulate a maximum concentration for the toxicity characteristic of 5 0 mg/l or effectively 5 parts per million (ppm) If the TCLP is performed on just paint samples, most lead based paints will leach more that the regulatory limit If it is recognized that the glovebox and the paint are actually being disposed, the overwhelming weight of the glovebox overcomes the weight of the lead in the paint With this in mind, the paint on the gloveboxes will not be sampled

4.0 PRE-SAMPLING ACTIVITIES

4 1 CLEAN OUT OF GLOVEBOXES BY THE DEACTIVATION GROUP

The first step in the D&D of the gloveboxes and the equipment in the gloveboxes involves the cleanout of any miscellaneous items, and a complete

clean out of the gloveboxes This is expected to meet the intent of the "Empty Container Rule" and the earlier cited correspondence

The clean out of the gloveboxes is usually accomplished using Chem Wipes, a high quality paper towel, and a cleaning solution A number of commercial cleaning solutions are available on site Any of the solutions containing a low residue soap or detergent would be acceptable

The cleaning process consists of wetting the surface from a spray container of the cleaner The worker then wipes the surface, turning the towel often, and being careful to use new, clean sections of the towel on previously uncleaned sections of the glovebox or equipment Special attention should be paid to cracks and areas where surfaces overlap The wipes used for cleaning the gloveboxes and equipment shall not be considered as hazardous waste, when dry, in accordance with 6 CCR 1007-3, Sec 261 7 and Sec 261 22, and the above cited correspondence

4.2 VISUAL INSPECTION

After the Deactivation Group has cleaned the interior of the gloveboxes, the boxes will be independently inspected by personnel from Waste Inspection and Characterization(WIC) WIC personnel will visually inspect for obvious residues If no residue is observed, the boxes will be considered non-hazardous, with the exceptions noted in 3 1 1

If the gloveboxes are deemed as not clean, the Project Manager can elect to re-rinse and re-inspect the gloveboxes, or they may elect to have the boxes sampled and analyzed for the RCRA chemicals If the analysis indicates that the chemicals are below the detection level of the analytical lab, the assumption will be made that the gloveboxes are free of the chemicals, and are thus non hazardous If the analysis indicates that the chemicals are above the detection level, the boxes will probably be scrapped as hazardous waste

4 2 1 HEALTH AND SAFETY CONCERNS

The personnel performing both the glovebox cleanout and rinsing will be Operations Personnel from Building 777 These personnel will be working under a "B" Integrated Work Control Program(IWCP) Work Package The Work Package process assures that the task has received sufficient review by Operations and Safety personnel that the work can be done in a safe and controlled manner, with oversight by Operations and Health and Safety,

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including Nuclear Safety, Industrial Hygiene, Radiation Control Technicians, Radiological Engineering, and Industrial Safety The IWCP process also assures that the task is scheduled on the Plan Of the Day(POD), that the workers are informed of any hazards associated with the job, and how to deal with those hazards, and that the necessary support groups are scheduled

The personnel performing the above task will be trained and qualified to work in gloveboxes, and with RCRA regulated wastes As generators of potentially RCRA regulated waste, the Building Operations personnel will be responsible for the collection, handling, and proper disposal of any RCRA waste that may be generated by the above operations

5 0 SAMPLING APPROACH AND REQUIREMENTS

If the gloveboxes do not pass the WIC visual inspection, as outlined in Section 3 1 5 above, the Project Manager may elect to re rinse and re inspect the tanks, or they may elect to perform a chemical sampling and analysis of the gloveboxes and equipment Under the assumption that the gloveboxes have failed the visual inspection, and that the decision has been made to sample the gloveboxes, the following sampling plan will control the sampling process

NOTE: Only if the WIC visual inspection indicates that the gloveboxes are not clean will sampling of the inside of the gloveboxes take place If the decision is made to scrap the boxes and equipment as RCRA regulated waste, no samples of the glovebox will be taken Waste characterization will then be based on "Process Knowledge" alone.

The survey will be conducted in accordance with the standard operating procedure "Waste Characterization Sampling Procedure Inside the Protected Area, L-3306A" This procedure, in conjunction with this Plan, provides detailed guidance and step-by-step instructions on how to perform the sampling

5.1 RESPONSIBILITIES

The Sampling Management Office(SMO) will be responsible for establishing the Chain of Custody (COC), packaging the samples in accordance with DOE, DOT, and State requirements, including the appropriate QA/QC samples with the shipment, and validation of the final results The SMO will also assure that the appropriate analytical methods are requested from the lab The SMO will

also be responsible for determining which lab(s) will conduct the chemical analysis The SMO will conduct business according to the "SMO Procedures Manual"

The analytical lab, either the internal lab or an outside commercial lab, will be responsible for the accuracy and precision of the results The lab is also responsible for completion of the QA/QC samples, and accurate reporting of the results The lab will conduct the analysis according to the requirements of the Environmental Protection Agency (EPA) SW-846 Analysis performed according to this requirement is considered as valid and defensible by all parties SW-846 spells out the requirements for the accuracy, methods of analysis, QA/QC, records keeping, and reporting methods

The Lab sampling team will be responsible for physically securing samples from the rinsate of the gloveboxes The team will also be responsible for following the direction of the SMO concerning the packaging and labeling of the samples

The Building Operations Personnel(BOP) will be responsible for performing the physical sampling of the interior of the gloveboxes and the equipment The BOP will be responsible for adhering to the requirements of the Work Package and the Radiological Operating Permit that this work will be performed under In addition, the BOP will be under the direction of SMO in assuring that representative samples are taken from the gloveboxes and equipment

The Radiation Control Technician(RCT) /Radiological Engineer(RE)will be responsible that the conditions of the Radiological Permit are adhered to The RCT/RE will also be responsible for assuring that any samples or material removed from the gloveboxes are free of radiological contamination, and that personnel are free of radiological contamination when exiting the area

Project Manager(PM) is responsible for the overall management of this task It is their responsibility that operations are carried out in accordance with this Plan, and are performed with due regard to the health and safety of the Public, environment, and the worker The PM is responsible for assuring that this task is performed in accordance with the requirements of the following documents,
1) *Waste Stream and Residue Identification and Characterization Program Description* (Manual 1-10000-EWQA Section 1 6 1)
2) *Rocky Flats Plant Environmental Management Site-Wide QA Project Plan* (QAPjP)
3) *E&WM SMO Procedures Manual*

4) *Colorado Hazardous Waste Regulations* (6 CCR-1007-3)
5) *State RCRA Permit*
6) *Waste Characterization Sampling Procedure Inside the Protected Area* (L03306-A)

Waste Identification and Characterization(WIC) is responsible for determining whether the gloveboxes and equipment meet the criteria of "clean" as identified in 6 CCR 1007 261 7 The decision of WIC is considered as final

6 0 SAMPLING

6 1 WASTE POPULATION

The waste forms being sampled and analyzed under this Sampling and Analysis Plan is expected to consist of only one population The population consists of residues that are located on the interior surfaces of gloveboxes and on the surfaces of the equipment inside the gloveboxes Other populations, such as leaded glass, leaded gloves, and lead shielding can be determined by simple visual inspection, and do not need a formal sampling plan These last three populations are thus outside the scope of this Sampling Plan

The chemicals located within room 415 will be disposed of as part of deactivation, and are thus beyond the scope of this project Any liquids which may remain in the process waste system are well characterized and will be addressed in the Decontamination Plan or the Waste Management Plan

A review of the *Waste Stream and Residue Identification and Characterization for Building 777*, the Chemical Tracking System, and interviews with operators indicates that the only "P" listed RCRA material used in rooms 415 and 416 was the following,

beryllium
sodium cyanide
hexaethyl ester tetraphosphoric acid (HETA)

The beryllium(Be) was one of the metals that was prepared for analysis in room 415 The Be was subject to cutting, grinding and polishing operations, and can be expected to be found in the form of "fines" or dust Be is not expected to be located outside of the gloveboxes used for cutting, grinding, and polishing

The sodium cyanide was used as an etchant It was used only in glovebox 316 and 321 This chemical was normally stored in the cabinet, located on the north side of room 415

Hexaethyl ester tetraphosphoric acid(HETA) was also used as an etchant It was also used only in glovebox 316 and 321, and was stored in the acid storage cabinet, located on the west side of room 415

6 2 SAMPLING STRATEGY

The three "P" listed chemicals were used in low volume and infrequently The Be was cut, ground, and polished in the gloveboxes It was also possible to chemically etch the Be, although lab personnel did not recall of etching Be on a regular basis The two other "P" listed chemicals, HETA and sodium cyanide, were used as etchants for specialized purposes

The chemical sampling in room 415 is aimed primarily at detecting the three "P" listed chemicals and other materials visivlay contaminated by RCRA regulated substances

6 3 GENERAL SAMPLING

All samples taken from inside the gloveboxes will use the rinsate method This technique uses deionized water to remove traces of the analyte This method consists of "bagging in" the required rinsate solution, scrub brush, and rinsate collection bottle The rinsate is sprayed on the walls, floor, and ceiling of the glovebox The rinsate is vigorously scrubbed, so that rinsate accurately represents any chemicals that may be on the surface of the glovebox The rinsate is then collected Samples from inside gloveboxes will have to be "bagged out" of the glovebox, and collected in bottles

Since the sample size is lab dependent, the Sample Management Office will determine the actual size of the sample, how it is to be labeled, handled, preserved, shipped, and tracked

All samples will be labeled, bagged, and packaged in accordance with the RFP *Chain of Custody Waste Characterization Project* (L-3004), the *Waste Characterization Sampling Procedure Inside the Protected Area* (L-3306), and the *On Site Transportation Safety Manual*, (1-94700-Traffic-110)

It was determined that 7 areas had the potential for being contaminated with

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the "P" listed chemicals The Statistical Applications Group has indicated that four (4) samples from any area can represent a valid sample Thus, it appears that 28 samples are needed to fully characterize the gloveboxes and equipment which may be contaminated with "P" listed chemicals In addition, a number of supplemental samples must be taken to satisfy the Quality Assurance requirements in EPA SW-846 These requirements are outlined in Chapter 7 of the *Waste Stream and Residue Identification and Characterization Program Description* (1-10000-EWQA) This Program Description requires the use of four types of additional samples

Field Blanks consist of sample bottles filled with ASTM Type II water, and exposed to the same sampling environment as the samples Thus, if the sampling environment consisted of any unusual or unexpected environment(chemicals), these would be reflected in the field blank, as well as the samples Normal guidelines call for one field blank for every 20 samples In the case of Room 415, two field blanks should be sufficient These field blanks should account for any unusual or unexpected chemicals that may be in the air The SMO will be responsible for directing where and how to take the field blank samples

Trip blanks consist of samples of ASTM Type II water that is handled, stored, and shipped in the same manner as VOC samples VOCs are not going to be sampled from Room 415, but these samples will indicate if the samples were improperly stored or shipped Normal procedure stipulates that one trip blank be generated for each day of sampling Since the sampling in Room 415 should be completed in one day, only one trip blank will be generated

Field duplicates consist of independent samples collected from the same place and time as the ordinary sample The field duplicates are placed in separate containers, but are handled and shipped just as the ordinary samples The difference with field duplicates is that they are analyzed independently If any differences exist in the results of the ordinary sample and the field duplicates, it can be assumed that some problem exists with the analysis, although which analysis is at fault may not be clear Normal procedure is to take one duplicate for every 20 sample streams Since each glovebox(population) will be sampled 4 times, effectively each population has one sample and 3 duplicates Therefore, no duplicates will be taken

7 0 DOCUMENTATION AND SAMPLE CUSTODY

Details of sample custody and documentation procedures are contained in the *WSRIC Program Description* which references the RFP Standard Operating Procedures (SOPs) Documentation of sample custody is directed by the *Chain of Custody Waste Characterization Projects*, (L-3004) This SOP includes information on labels and seals, field logbooks, chain of custody records and analysis request sheets, as required by SW-846 Analytical data will be reported by the performing laboratory using standardized data reporting forms consistent with the *WSRIC Program Description*

8 0 HEALTH AND SAFETY CONCERNS

Any sampling conducted in room 415 would be performed under the direction of an Integrated Work Control Process(IWCP) Work Package, as well an a Radiological Work Permit The IWCP Work Package includes a review of the proposed work by a representative of Health and Safety The review by Health and Safety includes oversight by all of the groups within Industrial Safety

Any work conducted within a MAA would also be reviewed by a representative of Nuclear Safety This review would include any concerns for criticality and NMSL violations It should be noted here that no accountable quantities of SNM will be involved in any of these tasks

The Radiological Work Permit will review the Work Package for radiological concerns Radiological Engineering is aware of radiation exposure rates for various areas of Building 777, and will assure that any ALARA concerns are addressed, and that sufficient precautions are taken to assure that exposure is kept to a minimum, and that radiation control techniques are observed

Any of the above groups has the right and the duty to institute changes to the Work Package if it is felt that any operation is going to be performed in an unsafe manner No work will proceed until all reviewers have signed off on the Work Package In addition to the above review process, it is the right and duty of any involved person, to "stop work" on the Work Package if an unsafe condition or practice is observed

SAMPLING AND ANALYSIS PLAN
APPENDIX A - DATA MANAGEMENT PLAN
BLDG. 777, ROOMS 415/416

Rocky Flats Plant

(Decontamination & Decommissioning)

U.S. DEPARTMENT OF ENERGY

Rocky Flats Plant
Golden, Colorado

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LIST OF FIGURES

1 0 INTRODUCTION

The purpose of this Data Management Plan (DMP) is to support the Sampling and Analysis Plan for Rooms 415 and 416, contained in Bldg 777 and to identify the mechanisms and procedures for the efficient and accurate transfer of data from collection/generation of the data through its end-use This is achieved by identifying the sources of data, establishing systematic procedures for quality control/quality assurance, and creating a suitable database to allow end users the appropriate access to meet project requirements and to establish appropriate security and back-up measures to ensure data integrity The DMP identifies and defines sample documentation, sample tracking, data entry, data proofing, data reporting, and data management personnel responsibilities

This sampling project will involve the collection and analysis of data from only two sources

- Samples collected from the rinsate of the interior of gloveboxes and the equipment contained within the gloveboxes

- Redundent, equipment, field blanks, and trip blanks

This DMP has been developed to promote the proper and complete management of scientific and technical data that will be generated from the sampling of Rooms 415 and 416 The primary purpose of a DMP is to communicate to personnel collecting, using, and managing information how it will be recorded, stored, accessed, and reviewed Procedures are defined and implemented to ensure that data are collected, entered, and stored in a secure, controlled, and retrievable manner to accurately and efficiently transfer data into useful information This plan addresses the planning, implementation, and responsibilities to optimize data management and use of the RFEDS and the interim database, DATACAP

This DMP focuses principally on the data management and data handling Detailed discussion of peripheral activities (i e , field data collection methods etc) are described in the main portion of the Sampling and Analysis Plan (SAP) RFEDS will be the ultimate repository for all data generated during this project
Tracking and verification of data at each stage of the project is important The data tracking procedures identified in this DMP vary according to the data collection method employed Figure 1-1 provides a summary of the data sources and the flow of the data

2 0 RESPONSIBILITIES AND QUALIFICATIONS

Support staff for the data management tasks includes all personnel involved in data acquisition, quality control (QC), and data processing The designated staff are responsible for implementing and carrying out data management activities according to this plan All personnel shall be qualified to perform the tasks assigned to them

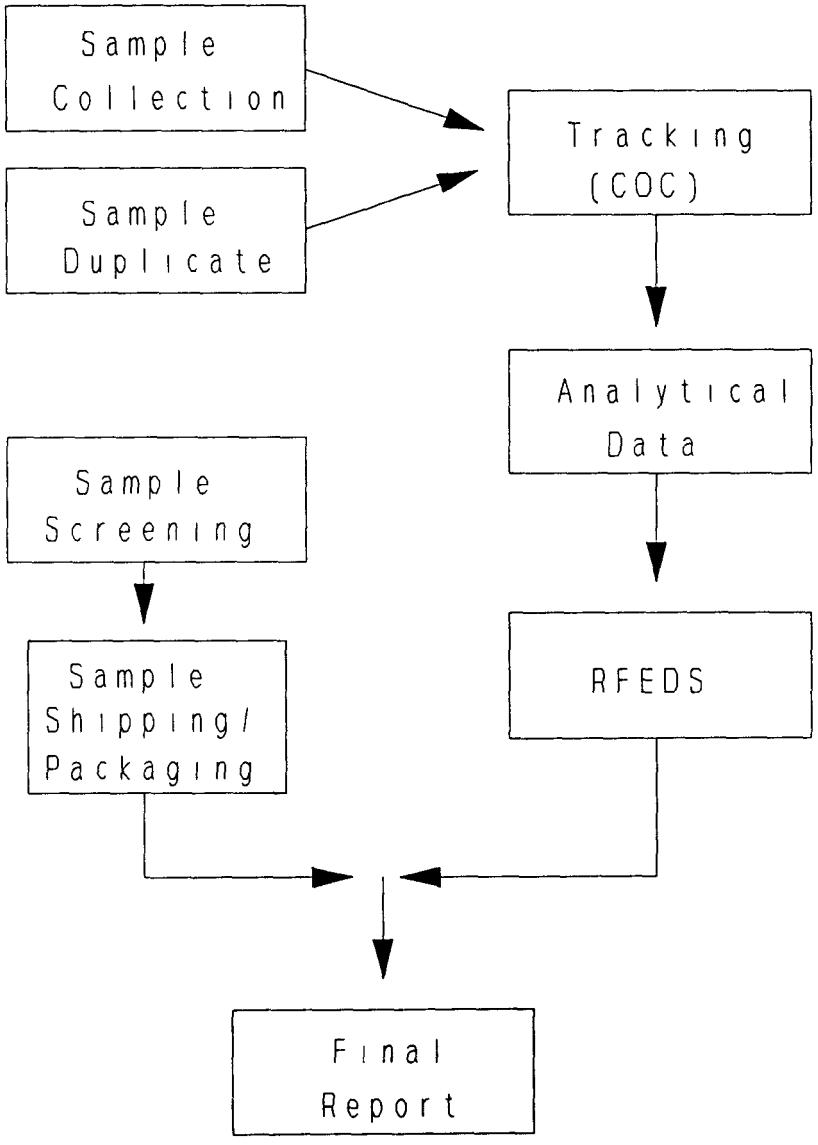
The primary personnel responsible for data management are the Project Manager, Project Data Manager, RFEDS Coordinator, Field Data Coordinator, Data Verifier and Quality Assurance/Quality Control (QA/QC) Officer The responsibilities for these positions are summarized in the following sections

2.1 Project Manager

The Project Manager will be responsible for ensuring that all data are collected, processed, and stored in a manner consistent with this DMP and in compliance with FO 14 "Field Data Management" Data management support personnel will report to the Project Manager with any problems that may impact the integrity of the data and/or the removal action

Figure 1-1

SUMMARY OF DATA SOURCES AND DATA FLOW



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2 2 Project Data Manager

The Project Data Manager has overall responsibility for the data management program including systematic updating of data This person will

- Establish the appropriate data management protocols as summarized in this DMP,
- Instruct the Field Data Coordinator in the proper procedures, and
- Oversee the flow of the data from the field through RFEDS

The Project Data Manager will report directly to the Project Manager In addition, the Project Data Manager will

- Implement the appropriate QA/QC procedures and document control,
- Directly communicate with data management personnel concerning procedures for data transmittal and problem resolution,
- Accept data from the field, the screening laboratory and RFEDS,
- Perform completeness check of field and RFEDS data,
- Perform technical verification of field and RFEDS data, and
- Document data distributions and users of final data

2 3 RFEDS Coordinator

The RFEDS Coordinator will be responsible for

- Ensuring the RFEDS data requested by data users is complete and in the appropriate format,
- Ensuring that data are preserved, retrievable, traceable, and available for response to regulatory agency requirements,
- Executing the proper procedures for the handling of the computer-based data, and
- Perform quality control checks of any electronic data, and RFEDS database security and backup

2 4 Data Verifier

The Data Verifier ensures that the data recorded in the interim electronic data base, DATACAP, are the same as the data recorded on the field data forms prior to transfer to RFEDS

2 5 Field Data Coordinator

The Field Data Coordinator is responsible for

- Ensuring that all data management procedures are correctly implemented in the field,
- Ensuring that all data and samples are assigned appropriate identification numbers,
- Overseeing the completion fo the field data forms in the field
- Communicating with the Project Data Manager to discuss the status of data collection activities and to verify that transmitted data are complete, correct, and accompanied by a transfer form

The Field Data Coordinator or designee will be responsible for completeness of the data package and will report to the Project Data Manager

2 6 QA/QC Officer

The QA/QC officer will ensure that procedures are carried out in accordance with this DMP The QA/QC Officer will report to the Project Manager or designee

3 0 DATA HANDLING SYSTEMS EQUIPMENT, DATA BACKUP, AND SECURITY PROCEDURES

The data handling and storage system will handle and store data including field data forms for the field instrumentation, laboratory screening data, and laboratory generated data from RFEDS

Data manually acquired in the field will be directly entered onto the appropriate forms as raw data and will be subsequently entered into RFEDS The original data will be kept in a lockable file cabinet under the Project Manager's jurisdiction Copies of all data collected will be sent to the Project Data Manager upon completion The Field Data Coordinator will be responsible for transmittal of the field data to the Project Data Manager Editing to the database will be performed by the RFEDS Coordinator, or their designee Any modifications to the data must receive the authorization of the

Project Data Manager Changes to the data will be documented as described in Section 5 0 of this DMP, "DATA MANAGEMENT, DATA TRACKING, DATA ENTRY AND DATA PROOFING"

4 0 DOCUMENTATION

4 1 Data Acquisition Documentation

It is necessary to record detailed information so that data acquisition can be reconstructed The Scientific Notebook System (SNS) is one of the primary mechanisms for data acquisition Any data that is collected using non-standard procedures will be collected in accordance with the SNS and documented in the scientific notebook Data for the sampling of D&D projects will be compiled from a number of different sources At a minimum, the scientific notebook, electronically collected data records, field instrument data, and sample collection forms should include the following information for each data or sample point

1 Field sample identification (ID)
2 Date and time of sampling/measurement
3 Sample measurement location
4 Sample measurement description
5 Parameters or analyses being reported
6 Associated quality control (QC) samples (e g , duplicates, matrix spikes, etc)
7 Approximate levels (in counts/minute, ppm etc) of contaminates as reported by field instrumentation

4 2 Transmittal of Field Data to Project Data Manager

All data generated in the field will be copied and transferred to the Project Data Manager or designee This data will include chain-of-custody (COC) forms, field notes, data generated by field instruments, and any other data generated in the field Following shipment of data from the field to the Project Data Manager or designee, the Field Data Coordinator will verbally confirm the data has been received The data will then be transmitted to the RFEDS Coordinator

4 3 Data Receipt Confirmation

Upon receipt of the data, the QA/QC Manager is responsible for checking, at a minimum that

1 All data was received and the receipt was noted on the Field Data

Transmittal Form

2 The data received matches the data acquisition plans

3 The appropriate field QC checks were performed (calibration of instruments etc)

The Project Data Manager will have the responsibility of ensuring that discrepancies identified during the checking process are corrected and documented

5 0 DATA MANAGEMENT-DATA TRACKING, DATA ENTRY, AND DATA PROOFING

5 1 Manually Collected Field Data

Data collected manually will consist of field measurements from the instrumentation used The results and other pertinent information will be recorded on the appropriate data collection forms (Figures 5-2, 5-3, and 5-4), including FO14 C "Soil Sample Collection Form " The results from the forms will be transmitted to RFEDS The data will be reviewed by the Project Data Manager prior to entry of the data into RFEDS

Figure 5-1

MANUAL DATA COLECTION SYSTEM FLOWCHART

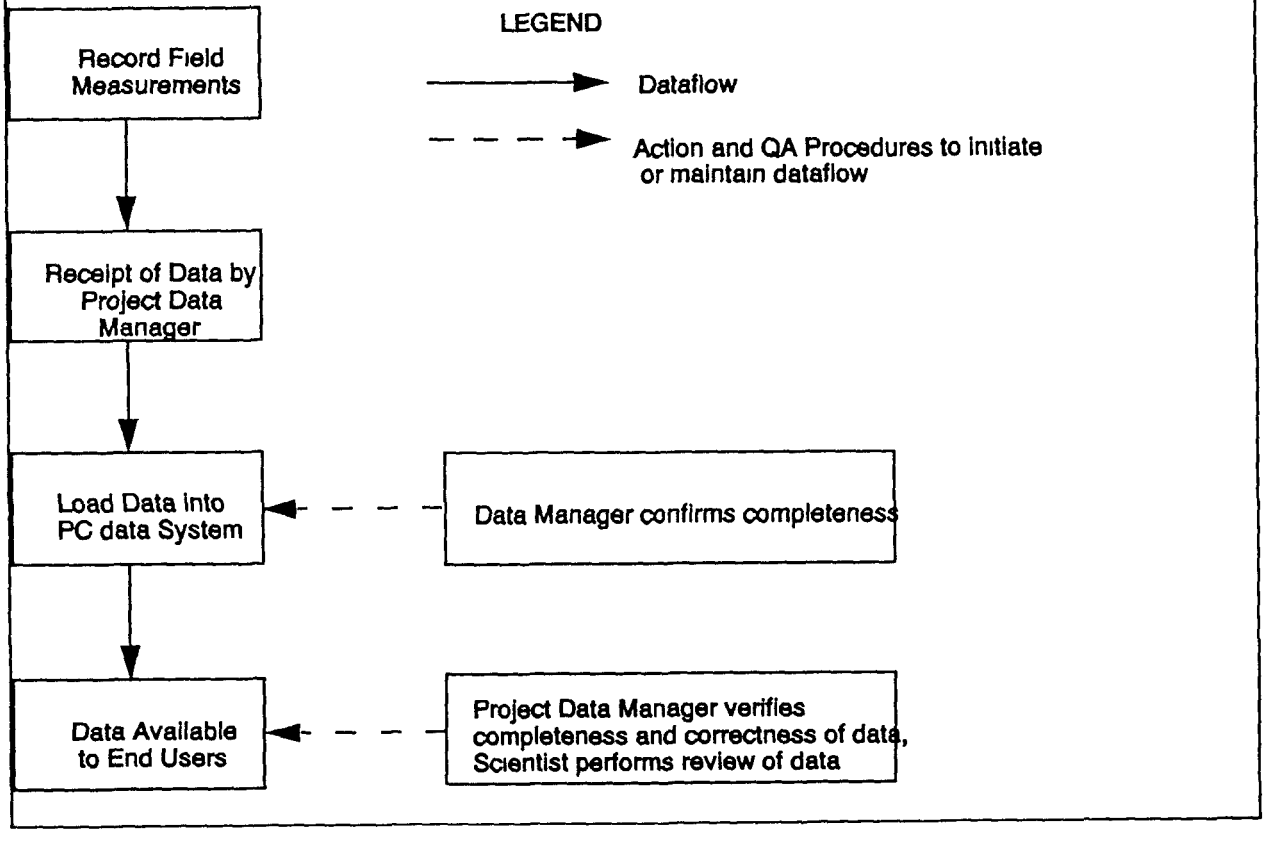

Figure 5-2
FIDLER MEASUREMENT FORM

1 Monitoring Location _____ Date _____

2 Equipment Information and Background Measurements

Manufacturer and Model No.	Serial Number	Calibration Date	Background Reading	Units (CPM)

3 FIDLER Measurements

Sampler Initials	Time (military)	FIDLER Reading (CPM)	Depth (inches)

Checked By _____
Print Name Signature

Figure 5-3
HNu MEASUREMENT FORM

1 Monitoring Location _____ Date _____

2 Equipment Information and Background Measurements

Manufacturer and Model No.	Serial Number	Calibration Date	Background Reading	Units (ppm)

3 FIDLER Measurements

Sampler Initials	Time (military)	HNu Reading (ppm)	Depth (inches)

Checked By _____
Print Name Signature

Figure 5-4
SAMPLE COLLECTION FORM

Sample Collection Form

Project Number		
Sample Number		Type SS
Contractor		
Station Code		
Collection Date	Quarter	Disposition
Collection Time	Purpose	
Sample Location		
Composite (Y/N)		
Composite Desc		
QC Type	Partner.	
Collection Method		
Sample Team Leader		
Member		
Member		
Volume Collected	Units	
Prepared By		

Surface Soil Sample Form

Depth of Take	Start (in)	End (in)
Headspace Reading		
Comments		

Sample Crew Member _____
Print Name

_____
Signature Date

5 2 RFEDS Analytical Data

Analytical data will be obtained from RFEDS in electronic format The data will be checked for format correctness and completeness Upon completion of loading, the Data Manager will review the data for completeness in comparison to plan

5 3 Data Entry

Data can be entered in two ways (1) manual entry from data collection forms and analytical data sheets, and (2) data electronically downloaded from RFEDS

5 3 1 Manual Data Entry

Manual data entry will be followed by a 100 percent data review by a person different than the person who originally entered the data Errors will be researched and corrected A hardcopy of the manually entered data will be initialed and dated by the person performing the review

5 3 2 Corrections and Changes to Sample Data

Changes or corrections may be required in the data stored in DATACAP All changes must be accompanied by a Data Correction/Change form (Figure 5-6) The form will detail the changes to be made and document that the changes were completed Corrections to the database will be proofed by the Project Data Manager or designee for potential entry errors

5 4 Data Verification

Ten percent of the field data in the database will be verified by comparing a printed hard copy from the database to field forms using the procedures in RFP Procedure 5-21000-OPS-FO 14, *Field Data Management,* Section 5 6 Typical errors that are found include, but are not limited to, the following

1 Incorrect field sample numbers
2 Duplicate data and samples
3 Improper parameter names
4 Samples with missing data
5 Missing samples
6 Incorrect sample collection data
7 Incorrect units

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8 Incorrect qualifiers
9 Missing detection limits, as applicable
10 Incorrect number of significant figures reported
11 Incorrect recording of times
12 Inconsistencies in the sequences of data collection

Figure 5-5

DATA FLOW FOR ANALYTICAL DATA

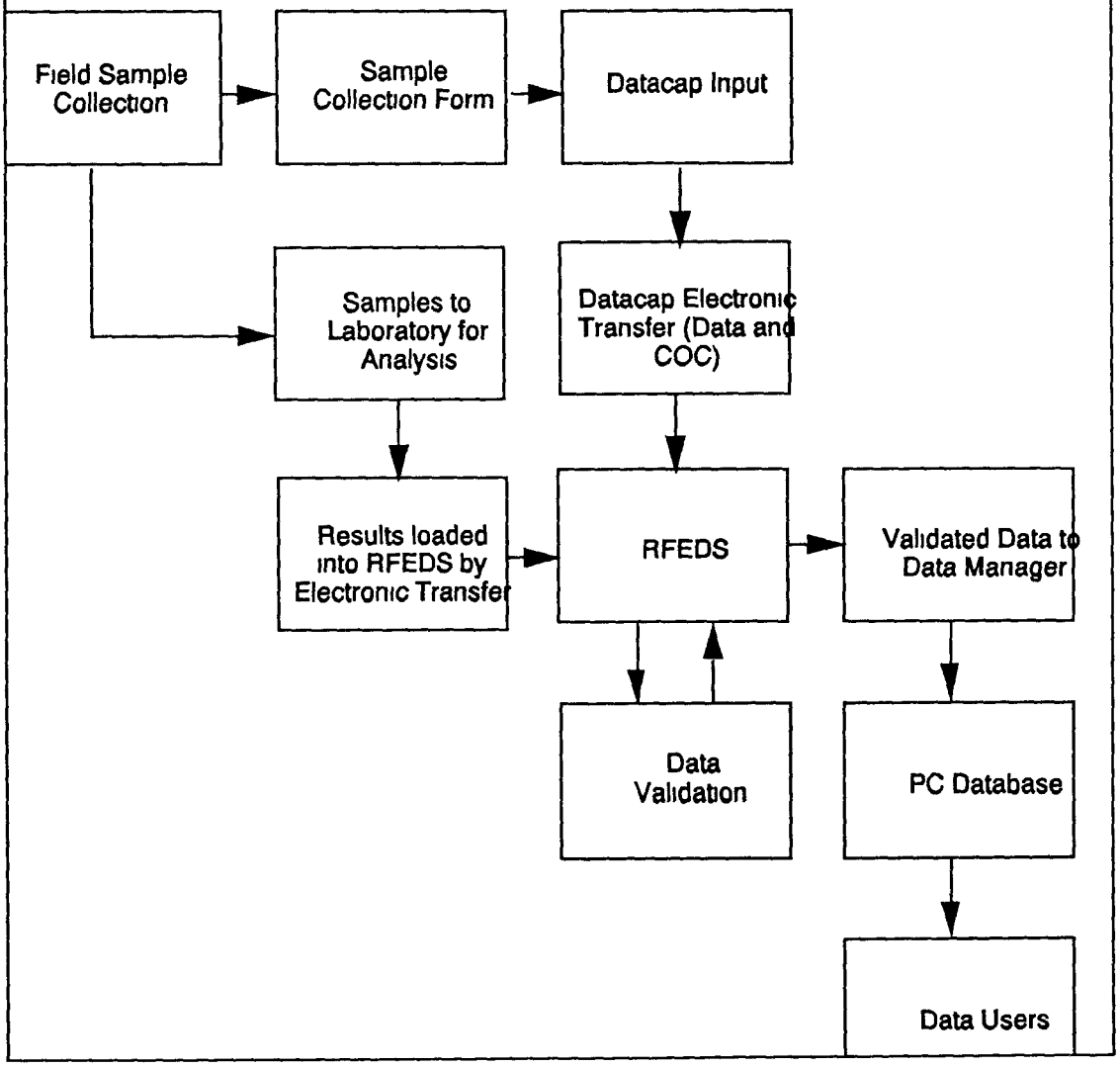

Figure 5-6

DATA CORRECTION/CHANGE FORM

The following changes and/or corrections to the database are required (check all that apply)

_____ Data qualifiers have been assigned to the attached sample data

_____ The following sample analyses have been changed

_____ Other changes or corrections (describe below)

Changes Requested By _____ (Print Name) _____ (Signature) _____ (Date)

Changes Made By _____ (Print Name) _____ (Signature) _____ (Date)

Changes Checked By _____ (Print Name) _____ (Signature) _____ (Date)

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5 5 Final QC Review

The following final data QC review steps are applicable to all data acquisition for the project These steps are designed to ensure the final database is complete and correct

1 Complete database QC review A hard copy of the database, organized by location, will be verified by the Project Data Manager or designee

2 Clearly mark corrections to the hard copy database report in red ink

3 Using the data entry sheets and sample collection sheets, check that data identifications are correctly listed on the database hard copy, and the number of data points or number of samples for the removal are reported on the database hardcopy

4 Check that all the parameters requested for each analysis are reported on the database hard copy and that units reported on the database hard copy are correct

5 Check that data time sequences are correct

6 Check values for all manually collected parameters reported from the database against the field collection forms, at a frequency of approximately 10 percent of the data for each test If errors are found, an additional 10 percent of results will be checked for similar errors If errors are found in the second 10 percent, all results will be checked

7 Check the corrected copy of the database to determine that corrections have been completed (i e , verify the final hard copy of the database)

8 The data will then be reviewed by a scientist familiar with the project objectives and data collection activity for data that do not make scientific sense (i e , a concentration value of 2,000,000 mg/kg)

9 Following completion of the QC procedure, the Project Manager, in consultation with the Project QA/QC Officer and Project Data Manager, will change the database reporting status to "FINAL "

SAMPLING AND ANALYSIS PLAN
APPENDIX B - QUALITY ASSURANCE ADDENDUM
BLDG. 777, ROOMS 415/416

Rocky Flats Plant

(Decontamination & Decommissioning)

U.S. DEPARTMENT OF ENERGY

Rocky Flats Plant
Golden, Colorado

ITS

Page

1 0 PURPOSE

This Appendix consists of the Quality Assurance Addendum (QAA) for all Decontamination & Decommissioning (D&D) Sampling and Analysis Plans (SAPs) The purpose of the QAA is to identify quality assurance (QA) requirements and specific measures for implementing these requirements

This QAA is intended to supplement the *Rocky Flats Plant Site-Wide Quality Assurance Project Plan for CERCLA Remedial Investigation/ Feasibility Studies and RCRA Facility Investigations/Corrective Measures Studies Activities* (referred to as the RFP Site-Wide QAPjP, or simply QAPjP) As a supplement to the QAPjP, this QAA establishes the site-specific measures and QA controls applicable to the actions described in this SAP

2 0 SCOPE

This QAA addresses all quality-affecting activities described in the SAP to be performed by EG&G Rocky Flats (EG&G), other organizations (subcontractors) shall implement similar QA programs under the auspices of the Department of Energy Rocky Flats Field Office's direction (DOE, RFFO)

The major actions within this SAP, to which this QAA applies, include

- Defining data quality objectives
- Gathering of field data
- Sample collection
- Sample handling and shipping
- Data Analysis

3 0 BASIS FOR TECHNICAL ACTIVITY

The work outlined in the Building 777 Sampling and Analysis Plan is to identify the specific analytical needs, sampling requirements, data handling requirements and associated QA/QC requirements for the completion of the glovebox and equipment sampling This includes the completion of the two main objectives, which are, 1) to confirm the RCRA chemical contamination has been removed or significantly reduced,

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and 2) to generate adequate and defensible information to characterize the material sampled from the gloveboxes and equipment for treatment, storage and/or disposal purposes The work specifically supports the verification, confirmation, and characterization of chemically contaminated areas within Building 777, rooms 415 and 416

4.0 BASIS OF QUALITY ASSURANCE REQUIREMENTS

The QAPjP was prepared to identify the QA requirements and methods applicable to the RFP Environmental Restoration (ER) Program activities, as identified in the Attachment 2 of the Inter Agency Agreement(IAG) Statement of Work Section IV A of the IAG specifies the minimum quality elements that the QAPjP must include, and references EPA QAMS/005/80, *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans,* for guidance in preparing the QAPjP

5 0 QUALITY REQUIREMENTS

5 1 Organization and Responsibilities

The EG&G Environmental Restoration Management (ERM), D&D organization is responsible for the overall coordination of the SAP for this project Other organizations such as the internal sampling management group and the subcontracted external laboratory will be involved with this work Responsibilities of other organizations will be assigned by the D&D organization

5.2 Quality Assurance Program

The ERM/D&D organization is responsible for preparing this QAA ERM Quality Assurance and as well as RFETS Quality Assurance will provide quality implementation support (including inspections and surveillance of system acceptance and performance) to assure that the quality requirements of this QAA and the QAPjP are being implemented Section 2 0 of the QAPjP identifies DOE Orders and QA requirement documents to which the QAPjP and this QAA are responsive The controls and requirements addressed in the QAPjP are applicable to SAP activities, unless specified otherwise in this QAA Where site-wide actions are applicable to SAP activities, the applicable section of the QAPjP is referenced in this QAA This QAA may address additional and site/project specific QA controls and requirements that are applicable to SAP activities

5.2.1 Training

The minimum personnel qualification and training requirements that are applicable to EG&G and subcontractor staff for RFP ERM Program activities are addressed in Section 2 0 of the QAPjP

All EG&G and subcontractor personnel that perform quality-affecting activities on this project shall have qualification records that document they are qualified to perform their assigned tasks The EG&G Project Manager shall identify any Rocky Flats Plant (RFP) area-specific and/or specialized training requirements that are applicable to project personnel

Job-specific training for field personnel will include but is not limited to

- OSHA 40-hour Hazardous Waste Operations training
- RCRA Computer-Based training
- EG&G Environmental Management Operating Procedures
- Field Operating Procedures
- Laboratory Analytical Procedures that are applicable to their assigned tasks
- Radiation Worker Level II
- Designated Waste Generator will be RCRA Waste Generator Qualified

In addition to procedures training, EG&G and subcontractor personnel shall receive training on the specific job they are to perform, via a pre-job evolution This training must be recorded, with verifiable documentation of training submitted to the EG&G Project Manager prior to implementing the sampling and analysis activities described in the SAP

EG&G and subcontractor personnel shall also be qualified to perform the tasks they have been assigned Personnel qualifications must be documented, with documentation of qualifications verified by the EG&G Project Manager in accordance with ERM Administrative Procedure 3-21000-ADM-02 02, *Personnel Qualifications*

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5 2.2 Quality Assurance Reports

A QA summary report will be prepared at the conclusion of the Project activities by the EG&G QA Program Manager This report will include a summary of field operation and sampling oversight inspections, laboratory assessments, surveillances, and a report on data verification/validation results

5 3 Design Control and Control of Scientific Investigations

5 3 1 Design Control

The QAPjP considers activities that generate analytical data, which requires collection and analysis of environmental samples, to be scientific investigations As such, this SAP is considered the environmental investigation control plan Controls for scientific investigations include

- Developing data quality objectives,
- Collecting and analyzing samples according to approved procedures,
- Establishing and implementing quality controls, and
- Reducing and reporting data in a controlled manner

5 3 2 Data Quality Objectives

Data quality objectives (DQOs) quantitatively and qualitatively describe the uncertainty that decision makers are willing to accept in results derived from environmental data DQOs were established to make the following decisions with a 95% level of confidence

The input, output, and decision parameters for this program are as follows,
Confirmation Samples

(1) Are the gloveboxes and the equipment within them free of RCRA regulated hazardous materials?

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Parameters used in the DEFT were as follows

INPUT

- Action Level - detection level of constitutes being analyzed

OUTPUT

- Number of Real Samples = 4 PER WASTE STREAM
  (Required to achieve the error tolerances above)

Characterization Samples

(1) Is the waste stream from the removal action adequately characterized?

Parameters used in the DEFT were as follows

INPUT

- NONE - the process is considered adequately characterized from process knowledge

OUTPUT

- NA

Precision, accuracy, representativeness, completeness, and comparability (referred to as PARCC parameters) are fundamental parameters used to indicate data quality The PARCC parameters are summarized in Table 5-1 Detailed definitions and determinations of the PARCC parameters are given in ERM Procedure 2-G32-ER-ADM, 08 02, *Evaluation of ERM Data for Usability in Final Reports,* (EG&G, 1994)

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Table 5-1

PARCC PARAMETER SUMMARY

Precision can be defined as how well sample measurement values compare with each other This comparison can be quantified by the Relative Percent Difference (RPD) value An RPD of $\leq$ 20% will be considered acceptable for analytical results in liquids

Accuracy can be defined as the agreement of the measured value with the true value of a parameter For analytical purposes, accuracy is indicated by the comparison of laboratory control samples to their true values

Representativeness is based on sampling locations and matrices specified in the SAP The SAP will ensure that samples represent the areas of highest probable contamination

Comparability is established by use of DOE and EPA approved standard operating procedures (SOPs) and analytical/radiochemistry laboratory methods Field and administrative SOPs are listed Table 5-2 Laboratory methods are listed in Table 5-3 Detection limits for all methods are also given in the GRRASP (EG&G, 1992) When deviations from the standard operating procedures (SOPs) occur, or when new or nonstandard procedures are implemented, a Scientific Notebook System (SNS) will be used as the primary means of documenting quality-affecting information (analytical method changes are requested from the program chemists and documented in the case narratives)

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Completeness is defined as usable data from ≥ 90% of all planned field samples This will include ≥ 50% of the usable data as validated with respect to analytical and radiochemical laboratory analyses

Table 5-2

FIELD AND ADMINISTRATIVE STANDARD OPERATING PROCEDURES

EG&G IDENTIFICATION NUMBER	PROCEDURE TITLE
5-21000-OPS-FO 3	General Equipment Decontamination
5-21000-OPS-FO 3	General Equipment Decontamination
5-21000-OPS-FO 6	Handling of Personal Protective Equipment
5-21000-OPS-FO 7	Handling of Decontaminated Water and Waste Water
5-21000-OPS-FO 10	Receiving, Labeling, and Handling Environmental Materials Containers
5-21000-OPS-FO 11	Field Communications
5-21000-OPS-FO 12	Decontamination Facility Operations
5-21000-OPS-FO 13	Containerization, Preserving, Handling, and Shipping of Soil and Water Samples
5-21000-OPS-FO 18	Environmental Sample Radioactivity Content Screening
2-G06-ER-ADM-05 10	Use of Controlled Scientific Notebooks
2-G32-ER-ADM-08 02	Evaluation of ERM Data for Usability in Final Reports
4-E42-ER-OPS-GT 08	Surface Soil Sampling
5-21000-OPS-FO 16	Field Radiological Measurements
4-B11-ER-OPS-FO 25	Shipping Limited Quantities of Radioactive Materials in Samples

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EG&G IDENTIFICATION

NUMBER	PROCEDURE TITLE
○ 5-21000-OPS-FO 14	Field Data Management
○ 3-21000-ADM-5 01	Document Control
○ 3-21000-ADM-15 01	Control of Nonconforming Items and Activities
○ 1-50000-ADM-12 01	Control of Measuring and Test Equipment
○ 1-50000-16 16	Corrective Action Program
○ 5-21000-OPS-FO 02	Field Document Control
○ 3-21000-ADM-17 01	Records Management
○ 3-21000-ADM-18 03	Readiness Reviews

Table 5-3

LABORATORY STANDARD OPERATING PROCEDURES

ANALYTICAL SUITE	CONTROLLING DOCUMENTS
○ VOCs	Title 40 of the Codes of Federal Regulation Part 264, Appendix IX
○ SVOCs	All laboratory analyses will also adhere to protocols specified in Parts A and B of the EG&G General Radiochemistry and Routine Protocol (GRRASP)
○ METALS	Analytical Services
○ Radionuclides	Part B of the GRRASP

5 3 3 Equipment Decontamination

Any equipment used for the sampling process and shall be decontaminated in accordance with Field Operations (FO) Procedure OPS-FO 03, General Equipment Decontamination and OPS-FO 04, Heavy Equipment Decontamination prior to removal from the contaminated area into a clean area

5 3 4 Quality Control

Field sampling quality control will consist of

- Collection of field duplicate samples will be at a minimum of 1 per 20 samples,
- Preparation and analysis of an equipment rinsate blank for ever 20 samples collected (at a minimum or at least one rinsate blank if 20 samples are not collected), and
- Trip blanks for VOC analysis

Notwithstanding the QA sample schedule just presented, the number of field duplicates and replicates that will be collected will be limited to one each per day Analytical laboratory QC for sample analyses shall be as specified in the GRRASP

5 3 5 Quality Assurance Monitoring

Random surveillances to assure the overall quality of the sampling and analysis activities associated with the SAP may be performed by ERM Environmental Quality Support department will include

- Daily field inspections,
- Various intervals of audits and surveillances, and
- A minimum of one surveillance per each field activity

5 4 Document Control

Documents produced by EG&G that control the work described in this SAP shall be '"controlled" to ensure that key project personnel receive accurate and up-to-date information Such documents shall be controlled in accordance with Section 6 0 of the QAPjP and with ERM Procedure 3-21000-ADM-5 01, *Document Control*

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5.5 Control of Purchased Items and Services

Procurement documents for items and services procured under this project, including services for conducting field sampling and analysis, shall be prepareD, handled, and controlled in accordance with the requirements and methods specified in Section 4 0 of the QAPjP and in ERM Procedure ADM-4 01, *Procurement Document Control,* including retention of purchase order receipts, contracts, or any other documentation related to the integrity/traceability of the purchased product or service

Subcontractors that provide services in support of the SAP activities will be selected and evaluated as outlined in Section 7 0 of the QAPjP This includes pre-award evaluation/audit of proposed subcontractors as well as periodic assessment of the acceptability of contractor performance during the project Any items or materials that are purchased for use during the sampling, analysis, and other SAP activities that have the ability to affect the quality of the data should be inspected upon receipt

5 6 Identification and Control of Equipment/Items (Handling, Storage, and Shipping)

Samples shall be identified, handled, containerized, shipped, and stored in accordance with QAPjP Section 3, Design Control and Control of Scientific Investigations, and Section 8, Identification and Control of Items, Samples, and Data

A sample chain-of-custody (COC) will be initiated at the time the samples are collected and maintained through all transfers of custody until the sample is received at the testing laboratory Samples shall be logged in upon receipt at the analytical laboratory and sample tracking throughout the analytical process shall be maintained in accordance with laboratory procedures

5.7 Control of Sampling and Analysis Processes

The overall process of collecting and analyzing samples require control The processes are controlled by adhering to the SAP and the sampling and analytical procedures referenced The requirements for

Sample Collection will be addressed in Section 6 0 of the SAP,
Sample Analyses will be addressed in Section 5 0 of the SAP,

5 8 Control of Measuring and Testing Equipment

Measuring and test equipment (M&TE) used in the screening of samples shall be selected, identified, calibrated, and maintained in accordance with the methods established in RFP Administrative Procedure 1-50000-ADM-12 01, *Control of Measuring and Test Equipment* The M&TE requirements of Section 12 of the QAPjP are implemented through operating procedures specific to the sampling/analysis event, manufacturers instructions, and specific laboratory procedures

5.9 Status of Inspections, Tests, and Operations

The status of the sampling and analysis inspections, startup SAP activities, and sustained operations shall be documented according to the requirements of Section 14 0 of the QAPjP

5 10 Control of Nonconformances

The requirements for the identification, control, evaluation, and disposition of nonconforming items, samples, and data will be implemented as specified in Section 15 0 of the QAPjP Items, samples, and data that do not conform to specifications and/or requirements shall be identified, segregated (where necessary to prevent inadvertent use), dispositioned, and evaluated in accordance with approved procedures Nonconformances related to the design, construction, installation, or testing of the testing system, and any waste related nonconformance, shall be controlled in accordance with ERM Procedure 1-50000-ADM-15 01, *Control of Nonconforming Items, Samples, and Data*

5 11 Corrective Action

The identification, reporting, closeout, and documentation of significant conditions adverse to quality shall be accomplished in accordance with Section 16 0 of the QAPjP and with ERM Procedure 1-50000-16 16, *Corrective Action Program* Conditions adverse to quality identified by the implementing contractor shall be documented and submitted to EG&G for processing as outlined in the QAPjP

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5 12 Quality Assurance Records

Field QA records will be controlled in accordance with RFP Procedure 5-21000-OPS-FO 02, *Field Document Control* Project records that are considered ERM QA records include, but are not necessarily limited to

The final report, (including all appendices),
Design documents,
Procurement documents,
Construction/installation records,
Supplier/subcontractor evaluations,
Inspection records,
Test records,
Logbooks,
Sampling records,
Sample chain-of-custody records,
Analytical data packages,
Interim and annual operating reports,
Action plans,
Operation manuals,
Noncompliance Reports (NCRs),
Corrective Action Reports (CARs),
Audit reports,
Surveillance reports,
Self-assessment reports,
Personnel training and qualification records,
The QAPjP,
Any administrative and operating procedures referenced herein, and
Any other project records that are used to support observations and conclusions in the final report

All ERM QA records generated shall be submitted to the ERM Project File for processing according to ERM Procedure 3-21000-ADM-17 01, *Records Management*

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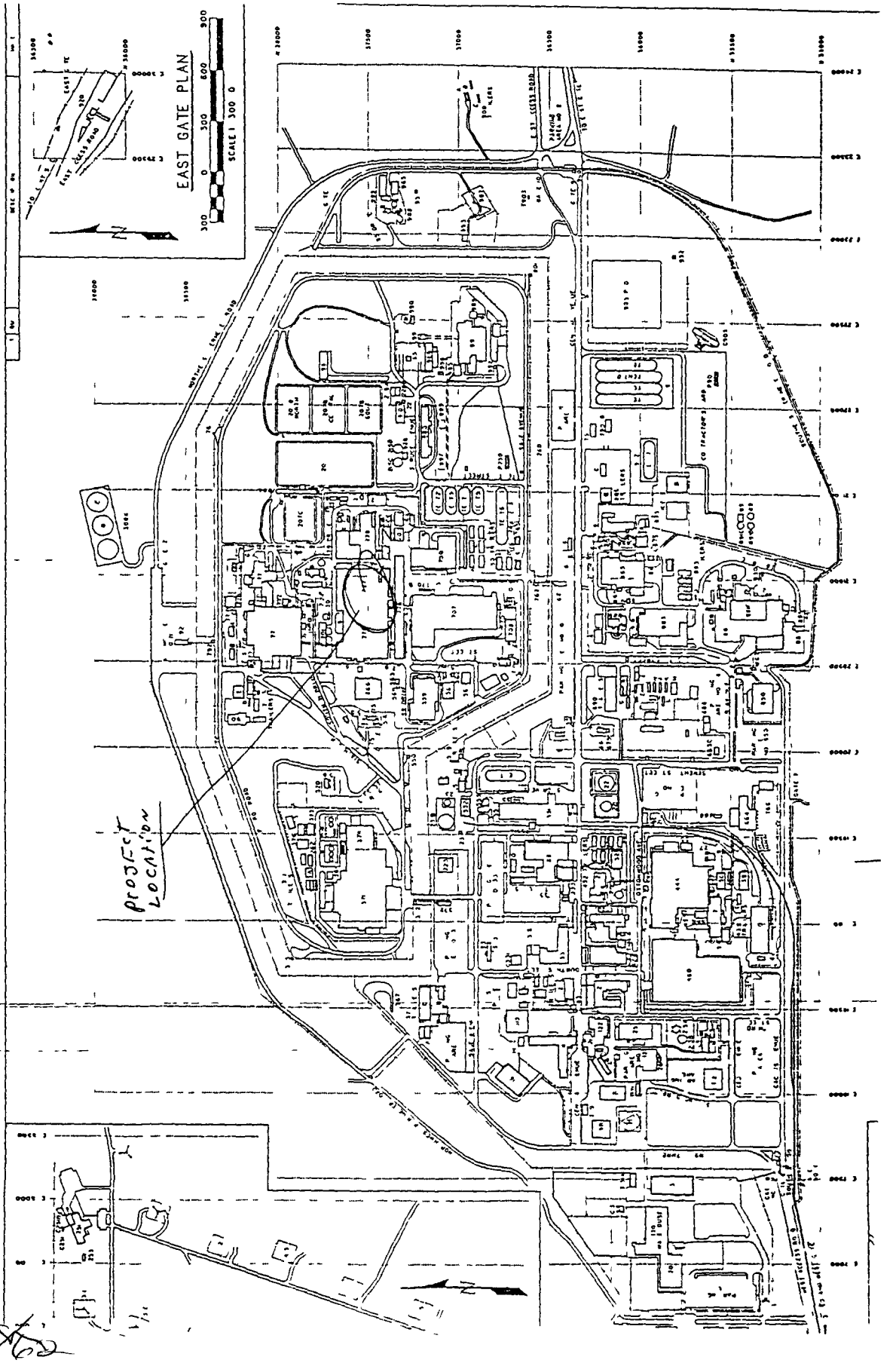
5 13 Quality Verification

QA surveillances and audits will be periodically conducted by the EG&G EQS department throughout the duration of project to verify the quality of project data Readiness reviews will be conducted according to ERM Procedure 3-21000-ADM, 18 03, *Readiness Reviews*

APPENDIX C

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE LAYOUT


EAST GATE PLAN
SCALE 1 300 0
300 0 300 600 900
Project Location

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APPENDIX D

LAYOUT OF ROOMS 415 AND 416

CHEMICAL INVENTORY IN ROOMS 415 AND 416

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APPENDIX E
CHEMICAL INVENTORY FOR BLDG. 777, Rm. 415
(ALL CHEMICALS INVENTORIED ON 10/93)

2-ethoxyethanol
acetic acid
adhesive, construction
alumina
alumina, black
alumina, white
aluminum etch
aluminum potassium
aluminum powder
ammonium chloride
ammonium fluoride
ammonium hydroxide
apiezon
beryllium etch - orthophosphoric acid
sulfuric acid
glycerol
ethyl alcohol
beryllium (P015)
Bes gloss
boat resin
boric acid
calcium sulfate
Carpellas etch - $FeCl_3$
HNO_3
ethyl alcohol
chromic acid
chromium trioxide
citric acid (monohydrate powder
copper fines
copper oxide
copperic chloride in hydrochloric acid & ethyl alcohol
cuporous chloride
cupric chloride
d-tartaric acid
detergent, alconox
diethylene glycol
lacquer
epoxy, plastisol
ethylene glycol
ferric chloride
fluid, #200
fluid, #510

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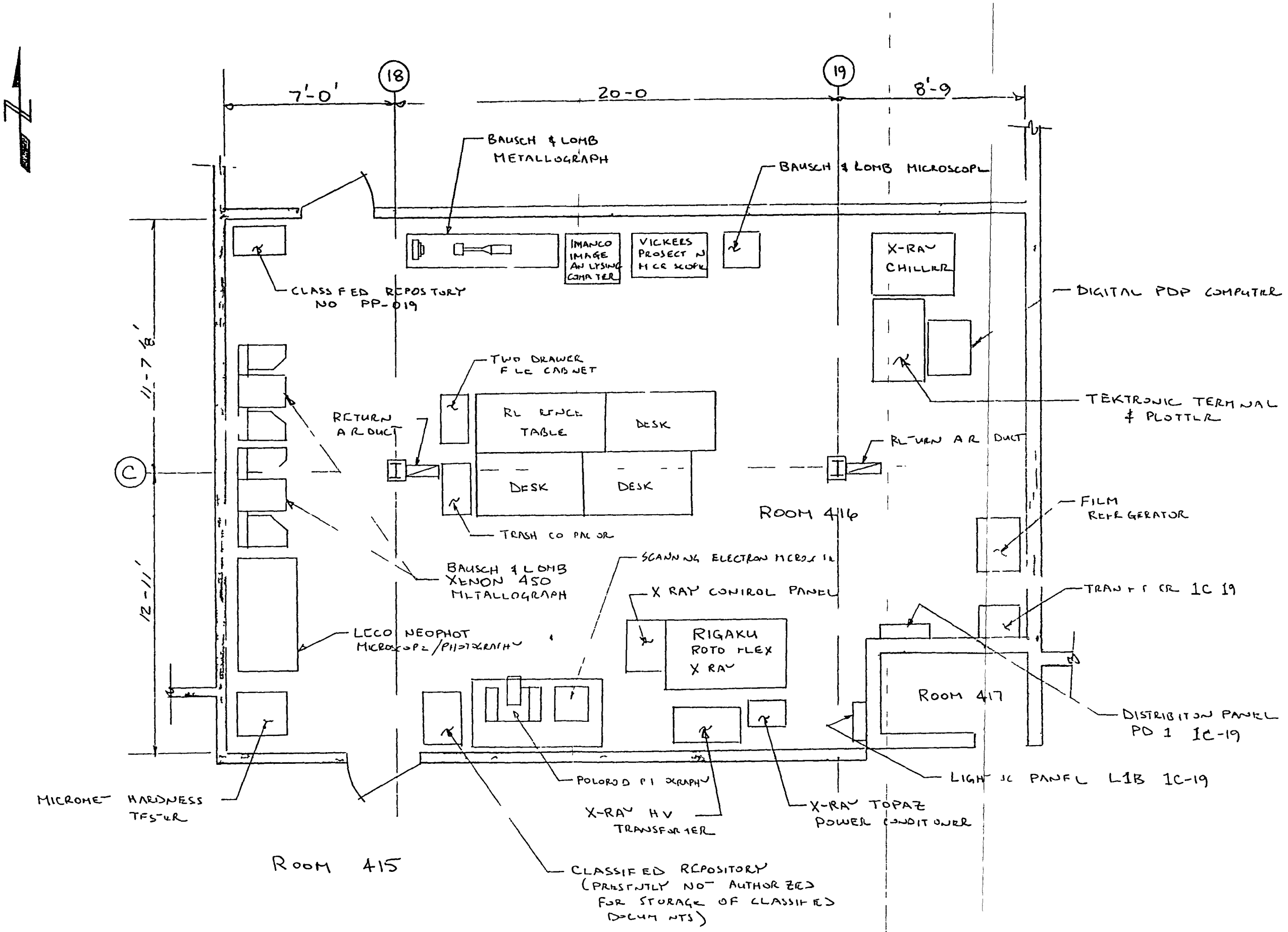
glycerin
graphite
grease, hi-vac
hydrochloric acid
hydrofluoric acid
iron fine

Kellers etch - HF
HCl
NHO_3
H_2O

Kodalith developer
lactic acid
lecoset
lens cleaner
Liqui-nox
Maraset
Marbles reagent
mercury
metadi fluid
methyl chloride
microid diamond compound
microid diamond slurry
molybdenum powder
monel etch
nickelous chloride
nitric acid
Oakite Conc
oil, lapping
oil, motor
oil, polishing
oil, 3 in 1
ospho acid
oxalic acid
petrolatum, snowwhite
phosphoric acid
Photo Flo
plutonium etch
potassium dichromate
potassium hydroxide
potassium nitrate
Pu etch (855 etch - acetic acid
chromic acid
water
nitric

ethylene glycol
methanol
resin, cold curing
resin, maraset hardener
RTV 20 polymer silicaon rubber
rubber cement
rust inhibiting additive
silicone mold release
silver etch - $K_2Cr_2O_9$
HCl
H_2SO_4
H_2O
silver-copper etch
sodium carbonate
sodium cyanide (P106)
sodium fluoride
sodium hydroxide
sodium hypophosphite
sodium oxalate
sodium phosphate
sodium sulfite
SS cleaner & polish
sulfuric acid
talc
talcum
tantalum etchant
tetraphosphoric acid, hexaethyl ester (P062)

titanium molybdenum etch - ethyl alcohol
butyl alcohol
AlCl
ZnCl
trichloroethane
Triple C spray cleaner
unichrome compound
uranium etch
varsol



PLAN - ROOM 416

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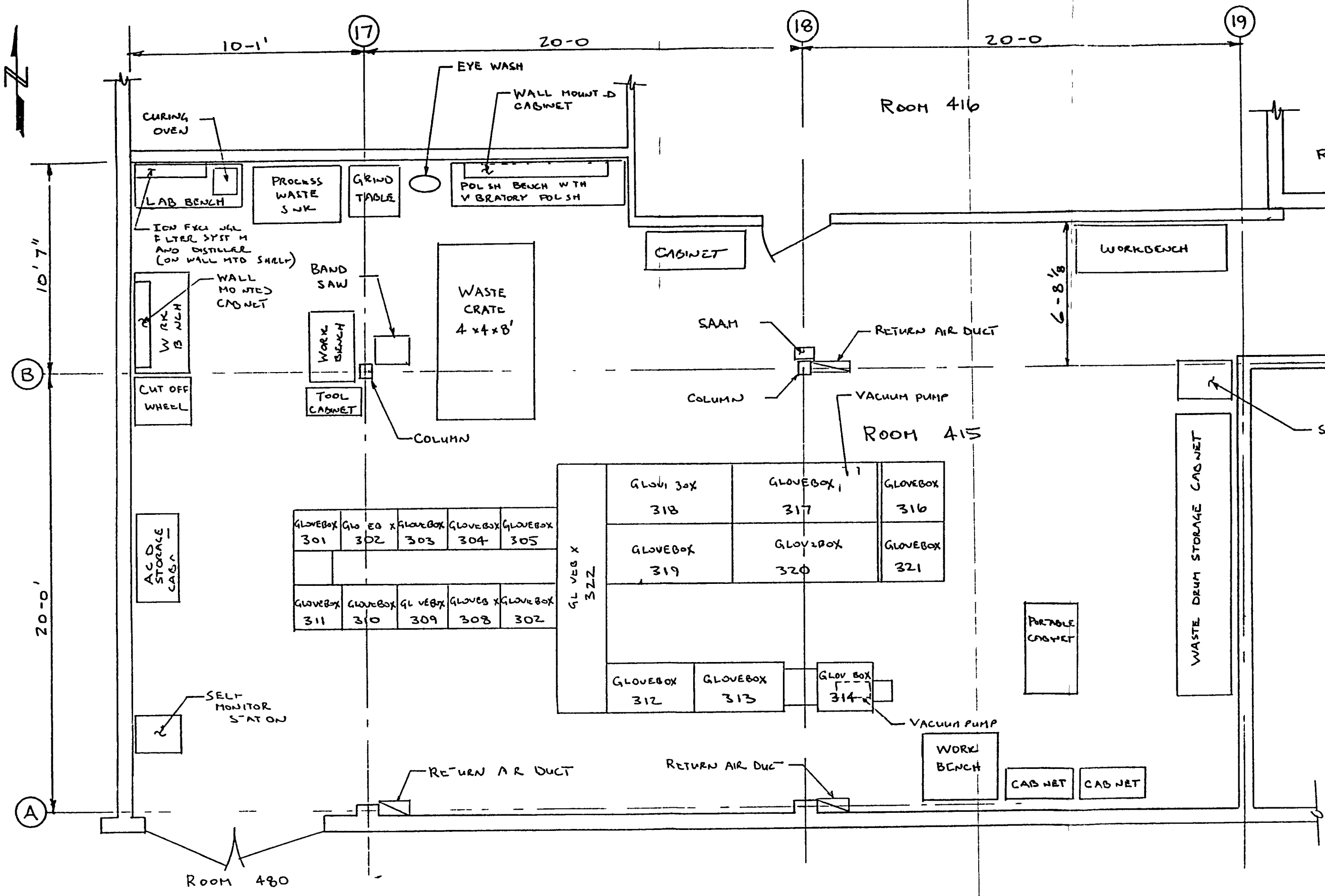

PLAN - ROOM 415

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